

ABSTRACT

An atomizer spray plate is provided for discharging fuel oil. The spray plate has a cylindrical rear portion and a conical front portion. A frusto-conical whirl chamber extends from the rear portion to the front portion with a decreasing radius. The rear portion includes a number of whirl slots extending radially inward from an outboard region of the rear portion to the whirl chamber to provide the fuel oil with rotational energy. A discharge slot is provided in the front portion of the spray plate for receiving fuel oil from the whirl chamber with rotational energy. The discharge slot includes a cylindrical through-hole with a diameter  $d$ , and at least three lobes (slots) equally spaced about the through-hole and oriented in a radial direction, each lobe having a semi-circular cross-section with radius  $r$  and extending approximately perpendicular to a central longitudinal axis of the through-hole.